

CLAIMS

1. A method for the manufacture of a partially crystalline polycondensate, especially a polyester or polyamide, comprising the following steps:
 - a) Manufacture of a polycondensate prepolymer melt;
 - b) Formation of granulates and solidification of the polycondensate-pre-polymer melt, by means of a granulation device, wherein the granulates is cut upon exit from a nozzle of the granulation device;
 - c) Raising of the degree of crystallization of the prepolymer granulates; and
 - d) Raising the molecular weight of the granulates by means of solid phase polycondensation,characterized in that in the step b), granulates with a mean diameter of less than 2 mm are formed.
2. The method according to claim 1, characterized in that in the step b), granulates with a mean diameter of 0.4 - 7 mm, especially 0.6 – 1.2 mm are formed.
3. The method according to one of the preceding claims, characterized in that, the polycondensate prepolymer melt is pressed through a nozzle plate with a multiplicity of nozzle holes, which preferably are arranged on at least one annular pathway.
4. The method according to one of the preceding claims, characterized in that, the cutting in the granulation step b) is carried out with a circumferential knife.
5. The method according to one of the preceding claims, characterized in that, the cutting in the granulation step b) is carried out with a fluid jet, especially with a liquid jet.

6. The method according to one of the preceding claims, characterized in that the polyester involves a polyethyleneterephthalate, a polybutyleneterephthalate, a polyethylenenaphthalate or one of their copolymers.
7. The method according to one of the preceding claims, characterized in that the polycondensate prepolymer melt involves a polyester melt, especially the melt of a polyethyleneterephthalate or one of its copolymers with a degree of polymerization consistent with an IV value of 0.18 to 0.45 dl/g.
8. The method according to one of the preceding claims, characterized in that the prepolymer granulates upon entry into the crystallization step c) have a crystallinity of less than 10%.
9. The method according to one of the preceding claims, characterized in that the crystallization step c) is carried out in a fluid bed or fluidized bed reactor with the action of a fluidizing gas.
10. The method according to one of the preceding claims, characterized in that the average temperature of the prepolymer granulates (in °C) in the transition from granulation step b) to crystallization step c) does not fall under a value corresponding to 1/4 of the melting temperature $T_{m_{prp}}$ (in °C).
11. The method according to one of the preceding claims, characterized in that in the granulation step b) a liquid is used for the cutting, which is mostly separated from the prepolymer granulates, before they are fed to the crystallization step c).
12. The method according to one of the preceding claims, characterized in that water is used as liquid.
13. The method according to one of the preceding claims, characterized in that the polycondensate involves a copolymer of polyethyleneterephthalate, wherein the dicarboxylic acid component comprises more than 94 mol% or less than 84 mol% ethyleneglycol.

14. The method according to one of the preceding claims, characterized in that the polycondensate involves a copolymer of polyethyleneterephthalate, wherein the diol component comprises more than 98 mol% ethyleneglycol.
15. The method according to one of the preceding claims, characterized in that the polycondensate involves a copolymer of polyethyleneterephthalate, wherein the dicarboxylic acid component comprises 98 mol% to 99 mol% terephthalic acid.
16. The method according to one of the preceding claims, characterized in that simultaneously with the crystallization step c) heat-up to a suitable temperature for solid phase polycondensation takes place.
17. The method according to one of the preceding claims, characterized in that porous granulates are produced, into which preferably in step a) and/or step b), a foaming agent is added to the polymer melt.